Commonwealth of Massachusetts
Mandated Benefit Review

Review and Evaluation of Proposed Legislation Entitled: "An Act Providing Coverage for Lymphedema Treatments" Companion bills: Senate Bill No. 848 & House Bill No. 1309

Provided for:

The Joint Committee on Insurance

Division of Health Care Finance and Policy
Commonwealth of Massachusetts
July 26, 2004

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According to M.G.L. c. 3, s. 38c: "Joint committees of the General Court and the House and Senate Committees on Ways and Means when reporting favorably on mandated health benefits bills referred to them shall include a review and evaluation conducted by the Division of Health Care Finance and Policy pursuant to this section. The Division shall report to the committee within 90 days of the request. If the Division fails to report to the appropriate committee within 45 days, said committee may report favorably on the mandated health benefit bill without including a review and evaluation from the Division."

INTRODUCTION

The Joint Committee on Insurance referred proposed companion bills (Senate bill 848 and House bill 1309), each named "*An Act Providing Coverage for Lymphedema Treatments,"* to the Division of Health Care Finance and Policy for a review and evaluation. Senate bill 848's lead sponsor is Senator Susan C. Fargo and House bill 1309's lead sponsor is Representative Martin J. Walsh.

OVERVIEW OF PROPOSED LEGISLATION

Proposed HB 1309 and SB 848 would require all health insurers, including Group Insurance Commission (GIC) plans and MassHealth, to cover the cost of initial and follow-up treatment for lymphedema, including but not limited to "complete decongestive physiotherapy, manual lymph drainage, surgical treatments, compression garments, bandages, replacement garments or bandages or other courses of treatment recommended by a health care provider in accordance with generally accepted current medical standards" (medical literature calls this treatment "complex decongestive therapy"). The proposed legislation also would require coverage for treatment of lymphedema by a licensed physical therapist or licensed massage therapist if the therapist is certified respectively by the board of allied health professions or the municipality to treat lymphedema. (Currently, there is no state licensing program for massage therapists, which would make it impossible for the state to ensure that massage therapists are certified to treat lymphedema.)

The bills state that no person other than a licensed health care provider who is "competent to evaluate the specific clinical issues involved in the treatment of lymphedema may deny requests for the payment of benefits…" The bills also state that health plans can only impose copayments, fees, or conditions on this benefit that are equally imposed upon all individuals in the same benefit category. Finally, the bills state that no policy year or calendar year dollar or durational benefit limitations or maximums may be imposed for benefits or services provided to a person under this section.

EXECUTIVE SUMMARY

Lymphedema is the accumulation of lymph fluid that causes tissue swelling, particularly of the arms and legs. The condition can be primary (occurring at birth or developing at some point during one's lifetime) or secondary (developing after an injury or cancer treatment, particularly when lymph nodes are removed).

Medical literature recommends treatment for lymphedema consisting of a) manual lymphatic drainage; b) bandaging; c) proper skin care and diet; d) compression garments; e) remedial exercises; and f) self-manual lymphatic drainage and bandaging, if instruction is available. This group of treatments is collectively referred to as complex decongestive therapy (CDT). To our knowledge, studies regarding the medical effectiveness of surgery to treat lymphedema have not been performed.

The proposed legislation would require coverage of CDT, in addition to surgical treatments, replacement garments and bandages, any other treatment recommended by a health care provider in accordance with generally accepted current medical standards, and manual lymph drainage performed by a physical therapist or a massage therapist (both requiring certification to treat lymphedema).

Most Massachusetts insurers responding to a questionnaire from the Division stated that they already cover most of the benefits listed in the proposed mandate, except for massage therapy, generally with limits on the number of covered physical therapy (PT) visits per year. Insurers stated that a small number of enrollees use the lymphedema treatment benefits offered.

Compass Health Analytics calculated a range of estimates for the per member per month (PMPM) cost of the proposed mandate. Their mid-range cost estimate was $.0268 PMPM for 2005, which would gradually increase to $.0304 by 2009.

BACKGROUND OF ISSUE AND CURRENT LAW[1]

The lymphatic system helps the body maintain fluid balance and filter out waste products. Lymph nodes help to destroy bacteria, cancerous cells or other wastes. Lymphedema is the accumulation of lymph fluid that causes tissue swelling, particularly of the arms and legs. Lymphedema can be primary (a relatively rare condition that a child may be born with or develop during puberty or adulthood) or secondary (due to damage to the lymphatic system as a result of trauma, parasites, surgery or radiation therapy). Lymphedema can be mild, moderate or severe. Secondary lymphedema can occur after an injury or surgery or radiation for cancer (breast, colon, bladder, prostate, etc) and has a higher probability of occurring if lymph nodes were removed during surgery. The American Cancer Society estimates that 10-15% of breast cancer survivors will develop lymphedema. Another study published in 2001 in the Journal of the National Cancer Institute estimated that there is an overall incidence of arm lymphedema after breast cancer therapy of 26%.[2] The Division could not find any studies of the incidence of lymphedema related to other types of cancer treatment. The National Institutes of Health estimates that primary lymphedema could have an incidence of anywhere between 1 in 300 to 1 in 6,000 live births and it estimates that there are 3-5 million people affected with secondary lymphedema in the United States.[3]

A new surgical technique called the sentinel node biopsy can reduce the chance of secondary lymphedema from occurring by limiting the number of lymph nodes removed during surgery. Other preventive techniques include keeping skin clean and well hydrated (not allowing bacteria to enter skin), exercise, and not allowing blood pressure readings, injections or blood draws from the arm in the side of the body from which lymph nodes were removed.

A review of medical literature suggests that most physicians recommend a treatment approach based on complex decongestive therapy (CDT). (The proposed legislation uses the term complete decongestive physiotherapy which the Division assumes refers to the same treatment used in medical literature.) CDT consists of a) manual lymphatic drainage (through light massage—most organizations recommend it be performed by a physical or occupational therapist specially trained in the management of the condition); b) bandaging; c) proper skin care and diet; d) compression garments; e) remedial exercises; f) self-manual lymphatic drainage and bandaging, if instruction is available; and g) continuing to follow prophylactic methods at all times.[4,5] Surgical treatment of lymphedema is uncommon and almost never mentioned in the medical literature. According to the nonprofit organization for breast cancer education called breastcancer.org, surgery for lymphedema is a last resort and something that is rarely performed in the United States. They assert that surgery could make the condition worse.[6]

The intense initial treatment by a therapist trained to treat lymphedema using CDT typically takes place 5 times a week for 3-4 weeks. During this time, home therapy is taught and bandages/compression garments are ordered. If the patient experiences a flare-up, he/she might need to see a therapist for another session of manual lymph drainage. Bandages and compression garments might be used for years or even decades after the initial treatment to maintain the optimal size of the limbs.

Massachusetts does not currently require insurers to cover lymphedema treatments. Also, while the state licenses physical therapists, it does not license massage therapists. There is currently no state certification for either physical or massage therapists to provide lymphedema treatment. However, a national organization (The Lymphology Association of North America-LANA) has begun administering an examination that would certify those who pass it to treat lymphedema. Candidates must meet strict qualifications before they can sit for the exam (both massage therapists and physical therapists with specified amounts of training and experience are eligible).

A federal law entitled the Women's Health and Cancer Rights Act of 1998 was enacted to provide protections to patients choosing to have breast reconstruction in connection with a mastectomy. It generally applies to group health plans and non-group coverage only if the plan covers mastectomies. It states that if you are having a mastectomy and elect breast reconstruction, coverage must be provided for reconstruction of the breast on which the mastectomy was performed, surgery and reconstruction of the other breast to create a symmetrical appearance, prosthesis (breast implant, etc), and treatment of physical complications of the mastectomy including lymphedema.[7] This law requires all fully-insured and self-funded plans in the country (including Massachusetts) to include coverage for treatment of lymphedema related to mastectomy (though it does not list specific types of treatments).

ORGANIZATIONS/INDIVIDUALS THAT SUBMITTED INFORMATION TO DHCFP

The following organizations, individuals, associations and insurers submitted information to the Division of Health Care Finance and Policy (DHCFP) to be considered for this analysis: the Massachusetts Association of Health Plans (MAHP), individual consumers, physical therapists and representatives of Massachusetts lymphedema clinics, the Massachusetts chapter of the

National Federation of Independent Businesses, Julius Zorn, Inc ("Juzo"), DMA PCC Plan, DMA BMCHP Plan, Blue Cross and Blue Shield of Massachusetts, Tufts Health Plan, Fallon Community Health Plan, Harvard Pilgrim Health Care, Network Health, and Neighborhood Health Plan. Information regarding utilization and pricing was submitted by health plans anonymously through MAHP.

Consumers, physical therapists, representatives of Massachusetts lymphedema clinics, and Julius Zorn, Inc (a manufacturer of graduated compression garments) submitted letters in support of the proposed legislation. Some consumers said that they had been denied coverage in the past (usually for bandages or compression garments) and complained that they are limited to a certain number of physical therapy treatments per year.

MAHP and the Massachusetts chapter of the National Federation of Independent Businesses submitted letters in opposition of the proposed mandate. The MAHP's main arguments against enacting the legislation were that treatment is already covered, there are minimal licensing requirements for massage therapists, having no calendar year or durational limitations on coverage for lymphedema treatment would be "problematic in claim administration (in requiring special treatment of one condition) and it also has the capacity to negatively impact a health plan's ability to accurately price an affordable product." They also state that "…other states that have included mandates for lymphedema have only done so in the context of coverage for treatment of breast cancer."

DEFINITIONS

Bandaging: This consists of wrapping the affected arm with low stretch bandages to increase drainage, encourage lymph flow, and prevent fluid from refilling the arm.

Complex decongestive therapy: The primary treatment for lymphedema is complex decongestive therapy consisting of 1) manual lymphatic massage/manual lymph drainage, 2) skin care, 3) bandaging, 4) exercises, and 5) instruction in self-care. *(National Lymphedema Network)*

Compression garments: Well-fitted sleeves worn on the affected limb that may help to prevent swelling.

Lymphedema: The build up of lymph fluid in the tissues that results in swelling usually of the arms and legs. Primary lymphedema, which is uncommon, can develop because lymph nodes or vessels are missing or are not working the way they should. Secondary lymphedema can occur as a result of cancer or cancer treatments. For example, during surgery for cancer, doctors may remove lymph nodes to see if the cancer has spread; this removal may make it difficult for lymph fluid to circulate to other parts of the body, which might cause swelling. Signs of lymphedema include: a full or heavy feeling in an arm or leg, a tight feeling in the skin on the arm or leg, less movement or flexibility in the hand, wrist or ankle, difficulty fitting into clothing in one area such as the sleeve or shoe, a ring or watch feeling tight when the individual did not gain weight. (American Cancer Society, 2004)

Lymphedema therapists: Usually have educational backgrounds including nursing, physical and occupational therapy, and massage therapy. Most therapists need supplemental training specifically in lymphedema treatment. *(National Lymphedema Network)*

Manual lymph drainage: Massage therapy designed to stimulate the movement of lymph to healthy lymph vessels. (MLD is different from traditional massage in that it is a very gentle stimulation of lymph flow.)

CURRENT COVERAGE LEVELS

Proposed Senate bill 623, if enacted as a state law, would be preempted by the federal Employee Retirement Income Security Act (ERISA), which precludes state laws from applying to self-insured benefit plans and their members. The 2001 Massachusetts Employer Health Insurance Survey by DHCFP found that approximately 27% of Massachusetts employees enrolled in employer-sponsored health plans are covered by self-funded plans.

Current Coverage for Lymphedema Treatments

The following plans/insurers responded to the Division's survey about coverage and cost of hearing screening tests: Medicaid plans (Primary Care Clinician (PCC) Plan, Network Health and Boston Medical Center Health Net Plan (BMCHP)), Blue Cross and Blue Shield (BCBS), Tufts Health Plan, Fallon Community Health Plan, Harvard Pilgrim Health Care, and Neighborhood Health Plan. Some plans submitted their information anonymously through MAHP. Note: Fully-insured managed care plans offered by the Group Insurance Commission (for state employees, retirees and dependents) are subject to state mandate laws. GIC's self-funded plans would not have to abide by this mandate.

All insurers responding to our inquiry reported that they cover complete decongestive physiotherapy (including manual lymph drainage, compression garments and bandages, and replacement garments and bandages), surgical treatment and physical therapy sessions for lymphedema. No plans cover massage therapy for lymphedema. MassHealth reimburses for all forms of treatment listed above except for compression stockings and treatment by massage therapists. (MassHealth covers compression bandages and surgical stockings.) Insurers and Medicaid plans reported very few appeals by patients in response to a denial of coverage for treatment. Two plans reported that no appeals were filed in 2003, one plan does not track appeals by specific diagnosis, and another three reported one appeal each in 2003 (one for a compression garment, one for treatment by a massage therapist, and the last for a lymphapress pump with leg sleeves, but the patient withdrew this appeal).

However, lymphedema patients presented and submitted statements to the Joint Committee on Insurance and to the DHCFP testifying that they have been denied coverage by their insurer for treatments including bandages, compression garments and pumps, and that they are limited to a certain number of physical therapy sessions per year (which is a common practice for PT coverage).

Most insurers reported that very few of their members actually used lymphedema benefits in 2002 or 2003. A few insurers reported utilization by a number of members (ranging from 5 to 14 people), and some insurers quantified use through percents (from .002% to 1.3%). Two insurers stated that they could not calculate utilization particularly for lymphedema benefits.

COST OF LYMPHEDEMA TREATMENTS

Some insurers covering Massachusetts residents provided cost information for certain lymphedema treatments. Insurers reported that they reimburse anywhere from $21 to $257 for manual lymph drainage, $9 to $38 for bandages, $20 to $177 for compression garments, and $61 to $1,140 for various types of surgical treatments. Physical therapy sessions vary in price and by length of the session (from $10 to $250 per session–length of sessions vary). In addition, some insurers have limits on the number of PT sessions reimbursed per year, whereas others have no limit as long as the PT is medically necessary.

MEDICAL EFFICACY

The Division of Health Care Finance and Policy is charged with reporting 1) the expected impact of the benefit on the quality of patient care and the health status of the population, and 2) the results of any research demonstrating the medical efficacy of the treatment or service compared to alternative treatments or services or not providing the treatment or service.

A study entitled "Effective Treatment of Lymphedema of the Extremities," was published in the Archives of Surgery in April 1998. The first phase of the study evaluated complete decongestive physiotherapy (CDP) including manual lymphatic massage, multilayered inelastic compression bandaging, remedial exercises, and meticulous skin care. The second phase focused on self-care using daytime elastic sleeve or stocking compression, nocturnal wrapping, and continued exercises. There were 299 patients with either upper extremity lymphedema (2% primary, 98% secondary) or lower extremity lymphedema (61.3% primary, 38.7% secondary) who participated in the study. They were treated with CDP for an average duration of 15.7 days. The study found that lymphedema reduction averaged 59.1% after upper extremity CDP and 67.7% after lower-extremity treatment. When they followed up with patients at 9 months, the improvement was maintained in compliant patients (86%) at 90% for the initial reduction for both upper and lower extremities. Noncompliant patients lost a third of their initial reduction. Also, the incidence of infections reduced from 1.1 infections per patient per year to 0.65 infections per patient per year after the CDP.[8]

This study demonstrates that complete decongestive physiotherapy can be successful in reducing swelling due to lymphedema and associated infection. Also, as long as the patient is compliant with their home care program, it is likely that they can maintain most of the initial improvement they had with CDP.

We spoke with Denise McIntosh, the Coordinator of the Lymphedema Center (and a senior physical therapist) at Lahey Clinic Medical Center in Burlington, Massachusetts. She stated that manual lymph drainage treatment usually lasts 3-4 weeks with the patient seeing the physical or

occupational therapist five days per week. During the treatment, the patient also is taught home therapy using bandages, compression garments, skin care and other techniques. She stated that most of the clinic's patients see significant improvement after their initial treatment and home-therapy training. The patient might need to return for a week of therapy at some point after the initial treatment, but some do not need any extra therapy and are able to control the lymphedema at home. Ms. McIntosh said that approximately 60% of their Center's patients are receiving arm therapy (often related to breast cancer treatment) and 40% are receiving leg therapy. Their Center is very busy and actually has a waiting list. Finally, she stated she had not heard her patients complain about being limited to a certain number of physical therapy sessions per year. The problem for the Center is that one session of physical therapy for lymphedema can last 1.5 to 2 hours whereas a standard PT session lasts .5 to .75 of an hour yet the Center is paid the same amount for both sessions.

To our knowledge, scientific studies to determine the usefulness of surgery to alleviate lymphedema have not been completed, and neither have studies to examine the efficacy and cost-effectiveness of having massage therapists treat patients instead of physical therapists. In general, scientific literature has stated that surgery to treat lymphedema is rather rare, obviously carries more risk as does all surgery and is a less proven treatment technique.

FINANCIAL IMPACT OF MANDATE

Compass Health Analytics, Inc performed an actuarial analysis to determine whether health insurance premiums would increase due to this proposed mandate.

DHCFP is required by Section 3 of Chapter 300 of the Acts of 2002 to answer the following questions:

1. *The extent to which the proposed insurance coverage would increase or decrease the cost of the treatment or service over the next 5 years.*

   All insurers in Massachusetts who responded to our survey on lymphedema coverage state that they already cover most lymphedema treatments, except for treatment by massage therapists. However, state residents submitted statements testifying that they have experienced difficulty getting coverage of bandages and compression garments and physical therapy. Since, according to insurers, most already reimburse for nearly all lymphedema treatments, the proposed mandate most likely would not have a significant effect on the unit cost of the treatment or service. Massage therapy is typically not a covered service; therefore, this proposed mandate could affect the cost of that particular service if there is an increased demand for it. Estimating potential demand for massage therapy is very difficult.

2. *The extent to which the proposed coverage might increase the appropriate or inappropriate use of the treatment or service over the next 5 years.*

   It is difficult to determine how this proposed coverage might increase the use of lymphedema treatments since patients and payers seem to differ regarding whether the services are already covered. The bill does not allow any policy or calendar year dollar or durational benefit

limitations or maximums for benefits or services. This unlimited benefit might then increase the frequency with which lymphedema patients request replacement bandages and garments (the elasticity only lasts a limited about of time). In addition, the unlimited physical and massage therapy benefit could cause lymphedema patients to see these providers more often; however, the treatment for the typical patient should not require more than three to four weeks of physical therapy.

It is possible that more people would seek care for lymphedema due to the proposed legislation. It is also conceivable that some people might order replacement bandages and garments unnecessarily and choose not to perform as much self-care at home in favor of getting the more expensive and unlimited manual lymph drainage treatments. Finally, since the proposed legislation also includes coverage for surgical treatment of lymphedema, which has not been proven to be a medically effective form of treatment, this bill might increase the demand for inappropriate use of surgery as a first-line treatment when complex decongestive physiotherapy might improve the problem and render surgery unnecessary. However, it should be assumed that physicians would resist providing an as yet unproven invasive procedure to patients when other therapies are available.

3. *The extent to which the insurance coverage may affect the number and types of providers of the mandated treatment or service over the next 5 years.*

   Currently, there seems to be a shortage of therapists who are trained in lymphedema treatment since the Boston area lymphedema clinics are operating at capacity and have found it necessary to create waiting lists. The proposed legislation could have the effect of encouraging more physical therapists and massage therapists to receive training in lymphedema treatment. However, since massage therapists are not required to hold a state license to practice, treatment by these practitioners would be difficult to monitor.

4. *The extent to which the mandated treatment or service might serve as an alternative for more expensive or less expensive treatments or services.*

   The proposed bills cover just about every treatment for lymphedema that the medical literature discusses; therefore, they would likely not be replacing other forms of treatment. However, since surgery to treat lymphedema would be required to be covered in the proposed legislation, this technique might be utilized more, even though it is not a medically proven technique for treating lymphedema.

5. *The effects of the mandated benefit on the cost of health care, particularly the premium, administrative expenses and indirect costs of large and small employers, employees and non-group purchasers.*

   Premium Cost Estimate of Lymphedema Treatment Coverage: Compass Health Analytics, Inc's actuarial analysis used the Massachusetts health plans' and MassHealth responses for their lymphedema treatment utilization estimates. They also did a test on the quality of the health plan data (a simulation analysis) using breast cancer incidence and rates of lymphedema related to breast cancer. This confirmed that the insurer data were plausible. Compass Health calculated incremental cost estimates for the benefits included in the proposed mandate that are not already covered or are being expanded. Their estimates

included low, mid-range and high-cost scenarios for the lymphedema treatment coverage being added by proposed mandate. Their mid-range premium cost estimate was $.0268 PMPM for 2005 increasing slightly to $.0304 by 2009. The low and high cost estimates for 2005 were $.0107 and $.0499 PMPM (all estimates include administrative costs). For additional detail on the estimates and methodology used to calculate them, please refer to the complete Compass Health Analytics report attached to this analysis.

6. *The potential benefits and savings to large and small employers, employees and non-group purchasers.*

   Presumably, severe lymphedema could cause an employee to use sick time or even quit their job, both of which would hurt employers (whether small or large) and the employee. In addition, early treatment of lymphedema could stop the problem from becoming severe, possibly causing health complications. However, each new mandated benefit increases premiums by a small amount (affecting all employers and employees) which adds up as more mandates are enacted.

7. *The effect of the proposed mandate on cost shifting between private and public payers of health care coverage.*

   Not applicable–proposed legislation applies to Medicaid and private plans.

8. *The cost to health care consumers of not mandating the benefit in terms of out-of-pocket costs for treatment or delayed treatment.*

   According to all Massachusetts insurance plans who responded to this survey, they already cover most lymphedema treatments; however, patients have complained that they are not receiving adequate coverage for treatment. If certain components of treatment were not covered currently, patients would be paying out of pocket if they sought treatments.

   If patients with lymphedema delay treatment because of insurance coverage problems, the problem could become severe and create a need for more treatment than originally necessary and more physical problems for the patient.

9. *The effects on the overall cost of the health care delivery system in the Commonwealth.*

   As previously stated, the proposed mandate could increase 2005 premiums by up to an estimated $.0499 PMPM (using the high-cost scenario). Fully-insured plans and MassHealth would have to decide whether to pass any cost increase on to consumers. Employers, non-group purchasers and enrollees might be affected by this slight cost increase.

LEGISLATIVE ACTIVITY IN OTHER STATES AND ON THE FEDERAL LEVEL

State Level Activity: According to the National Conference of State Legislatures (NCSL), eighteen states (including the District of Columbia) have enacted laws that require insurers to provide coverage for lymphedema treatment/therapy (usually related to breast cancer). Insurers in Kentucky must offer such coverage (but they can require a higher premium for insurance packages that include the benefit). The eighteen states requiring coverage are Arizona, Arkansas, California, Delaware, DC, Illinois, Kansas, Louisiana, Minnesota, Nebraska, North Carolina, North Dakota, Oregon, Pennsylvania, Texas, Utah, Virginia, and West Virginia. In addition, NCSL reports that several other states have introduced legislation to mandate coverage.

Federal Level Activity: In 1998, the Women's Health and Cancer Rights Act was signed into law. It is a federal law that applies to insurance products that cover mastectomies *(but does not require coverage for mastectomies)* and applies generally to both group and individual health insurance coverage. It also applies to self-funded plans, which are exempt from state mandates. The law requires coverage for reconstruction of the breast on which the mastectomy was performed; surgery and reconstruction of the other breast to produce a symmetrical appearance; prosthesis (e.g. breast implant); and treatment for physical complications of the mastectomy, including lymphedemas.

ENDNOTES

[1] Background information is from various websites: Cancer Supportive Care Programs www.cancersupportivecare.com/lymph.html, the Greater Boston Lymphedema Network (www.gbln.org), the National Lymphedema Network (www.lymphnet.org)

[2] Erickson VS, Pearson ML, Ganz PA, et al. Arm edema in breast cancer patients. J Natl Cancer Inst 93 (2): 96-111, 2001.

[3] National Institutes of Health Program Announcement "Pathogenesis and Treatment of Lymphedema" December 14, 2000.

[4] National Lymphedema Network, "Lymphedema: A Brief Overview", www.lymphnet.org/whatis.html

[5] American Cancer Society, "Understanding Lymphedema" www.cancer.org

[6] Breastcancer.org, lymphedema treatment using diuretics, Benzopyrones and surgery. www.breastcancer.org/lymphedema_treatment.html

[7] Centers for Medicare and Medicaid Services website, HIPAA Insurance Reform webpage, http://www.cms.hhs.gov/hipaa/hipaa1/content/whcra.asp

[8] Dicken S. C. Ko, MD et all, "Effective Treatment of Lymphedema of the Extremities," Archives of Surgery, volume 133 No. 4, April 1998.

Actuarial Assessment of Massachusetts Senate Bill No. 848 and House Bill No. 1309: "An Act Providing Coverage for Lymphedema Treatments"

F I N A L

Prepared for

Division of Health Care Finance and Policy
Commonwealth of Massachusetts

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F I N A L

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Actuarial Assessment of Massachusetts Senate Bill No. 848 and House Bill No. 1309: "An Act Providing Coverage for Lymphedema Treatments"

Executive Summary

The primary symptom of lymphedema is collection of excess fluid in body tissue. While lymphedema can be (in rare cases) congenital, and sometimes occurs in the lower extremities, it has been most often studied as a condition that affects the upper extremities related to the removal of lymph nodes during breast cancer surgery. Massachusetts Senate Bill No. 848 and House Bill No. 1309 (SB848/HB1309) proposes to require commercial insurers and MassHealth to cover the following benefits for patients with lymphedema: Complete decongestive physiotherapy, manual lymph drainage, surgical treatments, compression garments, bandages and replacement garments as recommended by a licensed healthcare provider, physical therapist, or massage therapist, and massage therapy.

Compass Health Analytics, Inc. was retained by the Massachusetts Division of Health Care Finance and Policy to provide an actuarial estimate of the costs associated with the implementation of such a mandate. Data provided by Massachusetts' health plans and MassHealth were drawn upon, as well as data from the medical literature, to produce a range of estimates for the cost of implementing these benefit requirements. Data provided indicate that most of these benefits are already in existing insurance plans and that these benefits are not drawn upon significantly by patients with lymphedema. The new incremental costs required by this proposed law would relate primarily to benefits for services of massage therapists, which none of the surveyed plans currently cover. A smaller incremental cost would also stem from the addition of a compression garment benefit for MassHealth, which had covered these garments but recently eliminated the benefit. Based on the limited use currently by lymphedema patients of the benefits already provided by insurers, removal of caps and other limitations for patients with lymphedema are not likely to have a financial impact.

Exhibit E1 displays a summary of the projected financial impact of SB848/HB1309.

Exhibit E1
Summary of Cost Impact Scenarios for Lymphedema Mandate

	2005	2006	2007	2008	2009
Low Scenario					
Change in Annual Premium	$ 0.13	$ 0.13	$ 0.13	$ 0.14	$ 0.14
Annual Dollar Impact (000s)	$ 295	$ 301	$ 307	$ 320	$ 326
Mid-Range Scenario					
Change in Annual Premium	$ 0.32	$ 0.33	$ 0.34	$ 0.35	$ 0.36
Annual Dollar Impact (000s)	$ 709	$ 734	$ 758	$ 806	$ 831
High Scenario					
Change in Annual Premium	$ 0.60	$ 0.63	$ 0.65	$ 0.68	$ 0.71
Annual Dollar Impact (000s)	$ 1,332	$ 1,391	$ 1,450	$ 1,567	$ 1,628

Key assumptions which drive the difference in the three scenarios are (i) the prevalence of lymphedema in the population and (ii) the degree to which individuals with lymphedema would access the massage therapy benefit.

Legal Requirement

SB848/HB1309 specifies coverage of certain services related to treatment of lymphedema.

Relevant Insured Population:

- Active or retired employees of the Commonwealth that are fully insured and under 65 years of age.
- Commercially fully insured individuals under 65 years of age.
- Individuals under 65 years of age covered by MassHealth.

Qualifying Condition:

- Diagnosis of lymphedema

Coverage Requirements:

- Complete decongestive physiotherapy
- Manual lymph drainage
- Surgical treatments
- Compression garments
- Bandages and replacement garments or bandages as recommended by a licensed healthcare provider, physical therapist, or massage therapist
- Treatment by physical and massage therapists certified to treat lymphedema

Overview of Impact Analysis

The steps required to identify the costs implied by this mandate are as follows.

1.) Estimate the annual prevalence rate of lymphedema in the relevant insured population.
2.) Determine which benefits required are not currently covered.
3.) For uncovered benefits, determine utilization rates for these services
4.) Estimate unit costs for the uncovered benefits.
5.) Apply the unit costs to the estimated utilization changes to calculate incremental costs of the mandate.
6.) Estimate the impact of the mandated benefit on the premium, administrative expenses, and indirect costs of the relevant insurers.
7.) Estimate the effects on the overall cost of health care delivery in the Commonwealth.

These estimates must be done for each insured group, for a five-year timeframe, and for both "low case" and "high case" scenarios.

Analysis/Calculations

Below we describe the basic steps taken to perform the projections.

Affected Population

The objective for the population analysis was to develop Massachusetts population projections for purposes of analyzing the impact of SB848/HB1309, which requires estimation of the active or retired employees of the Commonwealth that are fully insured and under 65 years of age, the commercially fully insured individuals under 65 years of age, and MassHealth enrollees (who are also all under 65; those over 65 are not in the MassHealth waiver). We produced estimates for the under 65 population with group and other policies, including both state employees and the remaining fully insured population, and for MassHealth. Exhibit I displays the estimates. Appendix A contains a detailed description of the sources and calculations used for the population estimates.

The resulting population numbers for each year were used in conjunction with projected utilization rates and unit costs to produce yearly cost estimates. As discussed below, the utilization rates and unit costs were developed from historical data.

Utilization Rates

A first, key step in determining utilization rates for services related to lymphedema is estimating the prevalence of lymphedema in the population. In this study, two independent approaches to estimating lymphedema prevalence in the population were taken. First, a simulation was performed based on a review of the research literature which incorporated breast cancer incidence, rates of lymphedema within that population, survival rates, duration of lymphedema, and severity of lymphedema. Second, estimates were calculated from counts of persons treated for lymphedema in the insured populations covered by the MADHFCP survey. The estimates that result from these two approaches were then compared.

The simulated prevalence was developed by first reviewing the literature on breast cancer and lymphedema. Developing a cost estimate for this study requires an estimate of the prevalence of lymphedema in the population, that is, the percentage of people in the population with an active condition requiring treatment at a given point in time. There are no existing estimates of lymphedema prevalence to our knowledge. There are, however, a variety of studies on lymphedema incidence[1]. Prevalence was estimated from this and other data by simulating over a 40 year time horizon as follows:

1.) Estimate annual incidence of breast cancer (the proportion of the population developing new cases each year).
2.) Estimate the percentage dying each year from breast cancer
3.) Estimate the percentage developing lymphedema each year
4.) Estimate the percentage with severe lymphedema
5.) Annual reduction due to cure or spontaneous improvement

Each of these factors was estimated based on research literature and statistics from the National Cancer Institute and the American Cancer Society. The simulation resulted in a mean prevalence of lymphedema in the population of 0.50 per thousand persons (approximately one in one thousand women), and a prevalence of 0.26 per thousand persons of severe lymphedema. Our review of the literature did not uncover any studies of lymphedema incidence associated with other causes of lymphedema, although interviews by the Massachusetts Division of Health Care Finance and Policy (MADHCFP) of lymphedema clinic staff indicate that surgery for other types of cancer can sometimes lead to lymphedema, and it in fairly rare cases arises congenitally. Although we believe these sources of the disease to be relatively small, our second source of data allowed us to verify this by capturing all types of lymphedema currently being treated in Massachusetts.

The second data source was a survey of health plans and MassHealth conducted by MADHCFP. These data contained numbers of individuals treated for lymphedema

[1] See for example:
Petrek, JA, et. al., "Lymphedema in a cohort of breast carcinoma survivors 20 years after diagnosis", Cancer, 2001 Sep 15;92(6):1368-77.
Deutsch, M, and JC Flickinger, "Arm edema after lumpectomy and breast irradiation", Am J Clin Oncol. 2003 June:26(3):229-331.
Ozasian, C and B Kuru, "Lymphedema after treatment of breast cancer", Am J Surg, Dec 2002 187(1): 69-72.

during the year, which allows for a "treated prevalence" of the disease from all causes. The survey information implies a prevalence (based on the number of persons treated during a year) in the population of 0.40 per thousand. Some women with milder lymphedema may not receive treatment during the course of a year, which would be consistent with the treatment prevalence (0.40) falling between the prevalence with severe lymphedema (0.26) and the prevalence of any lymphedema (0.50). And, to the extent that other causes of lymphedema exist, these results suggest that they do not constitute a large number of cases. Based on the corroboration of these two analyses with each other, and the fact that the survey data measure what we are most interested in (those receiving treatment for lymphedema from any cause) the value obtained from the survey (0.40) was used as the baseline prevalence for the analysis. For the low scenario, we assumed that the prevalence was half way between 0.40 and 0.26 (0.33), and for the high scenario we assumed it was half way between 0.40 and 0.50 (0.45). The middle scenario is based on a prevalence rate of 0.40.

After arriving at an estimate of prevalence in the population, we could calculate the number of individuals in that sub-population. The next step was to estimate the incremental utilization of services by the sub-population with lymphedema based on the provisions of the mandate. The data provided by the health plans also includes service use data by the individuals with lymphedema and it makes two general conclusions fairly clear:

1.) Almost all of the benefits specified by the proposed law are already covered; and
2.) Use of the existing benefits by this population is dramatically less than the benefit levels already in place.

On the first point, the only benefits proposed by SB848/HB1309 not currently covered are visits to massage therapists and compression garments (MassHealth only). We estimated costs for these services by developing a range of utilization rates for these services.

With respect to the second point, the data indicate that lymphedema patients do not currently use the benefits already provided very heavily. For example, based on the survey data, if each person with lymphedema at a point in time were to use one physical therapy visit per year, and no other benefits (surgery, compression bandages, etc.), the expenditure would approximately equal the benefits currently paid out, which are approximately $66 per person treated[2]. As a result, mandating coverage of what is already covered and not utilized is unlikely to incur much in the way of additional expenses. Even with the expanded benefit limits in the law, the great distance between current use and the existing benefit limits suggests that the expansion of the limits will not materially affect expenditures.

As a result of the foregoing, service utilization needed to be estimated only for massage therapy and compression garments for the MassHealth population. Given the lack of

[2] This is based on a PMPM of $0.0022, which was the highest of the values provided by the Health Plans.

utilization of physical therapy and other benefits already covered, creation of the massage therapy benefit may not result in large cost increases.

For purposes of estimating the low, medium and high scenarios, we assumed that the average lymphedema patient would utilize 5 massage therapy visits per year. This assumption allows the possibility that some patients will utilize little or no massage therapy, and others will utilize larger numbers of sessions. The low scenario assumed an average of 3 sessions, and the high scenario assumed an average of 7 sessions. Similarly for the compression garments, an average of 4, 6, and 8 per patient was assumed for the low, medium, and high scenarios, respectively.

Unit Costs

Based on the above utilization discussion, unit costs were required for two service types, massage therapy and compression garments. Since massage therapy is not currently a covered benefit, there were no data on unit costs for massage therapy in the survey data collected by MADHCFP. An internet review of massage therapy fees in Massachusetts was conducted; an approximate central tendency of $60 per hour was observed. The analysis assumes $55/hour for the low scenario, $60/hour for the middle scenario, and $65/ hour for the high scenario.

The incremental cost for the compression garment benefit only applies to the MassHealth population. MassHealth did not provide information on the unit costs for compression bandages and garments, probably because it is not currently a benefit. The surveyed health plans did provide information on average fees for compression bandages and garments. There was a range of unit costs for these from $20 up to $175. Most items listed were under $80, with only one item listed at $175. No information was available on the relative utilization of the various types of garments. Based on this limited information, we assumed that the average cost for all the items for the average patient was $40 for the low scenario, $60 for the middle scenario, and $80 for the high scenario.

Trending and Calculation of Claims Costs

Projected costs were calculated by applying the projected utilization to the unit costs (which themselves had been projected to each period). Unit cost trends were assumed to be 2% per year in the low case, 2.5% per year in the medium case, and 3% per year in the high case.

Trend factors were also applied to the procedure rates. Breast cancer has been diagnosed at increasingly high rates, and survival is also improving. Both of these factors indicate an increasing trend of lymphedema prevalence in the population going forward. At the same time, the prevalence in the population will only be impacted to a small degree by changes in the annual incidence. Balancing these factors, over the period 2003 (year for base data) to 2009, we assumed an overall growth rate in lymphedema prevalence of 5%

for the middle scenario, 10% for the high scenario, and flat (zero) growth for the low scenario.

Administrative Costs

In addition to the incremental medical care costs previously discussed, the overall impact of a mandate on the costs of health insurance in the Commonwealth consists of two other components:

1.) Incremental Administrative Expenses
2.) Incremental Margins

Incremental administrative expenses would be incurred for activities associated with the implementation of the mandate such as modifications to benefit plan materials, claims processing system changes, training/communication material for staff, etc. These costs would be non-zero but less than the average administrative costs of the plan.

Incremental margin is required in order for the insurer to maintain adequate reserve levels as required by the Massachusetts Division of Insurance. Required reserves are based on the claim levels for the insurer, and since the mandate would increase claim levels, it would increase required reserve levels and therefore incrementally increase the total dollars of margin required to meet those reserve levels.

A detailed description of the calculation of these two components is contained in Appendix B. As displayed in Exhibit III, the administrative cost impact of the mandate is in the range of one tenth to one half cents per member per month, or approximately in the range of $25,000 to $200,000 annually statewide.

Results

The results are displayed in Exhibits II and III. Exhibit II shows the estimated number of lymphedema patients per year, and the number of units of compression garments and massage therapy services (the compression garment unit totals are low because this benefit is incremental only to MassHealth). In 2003, the number of lymphedema patients is estimated to be between 1,318 and 1,836. The count of estimated individuals varies between scenarios owing to variation in the assumption about the incidence rate of lymphedema.

Exhibit III displays the projected costs of SB848/HB1309. The annual cost in 2009 is estimated to be between $0.3 million and $1.6 million, with a middle case estimate of $0.8 million. Variation in this estimate is due to the variation in affected individuals, as well as in the number of services per patient and the average unit cost for each unit.

The primary source of uncertainty in these estimates is the unknown degree to which patients would use a massage therapy benefit if it were available. A secondary, much

smaller, source is the limited information available about the mix of various compression garments and their related prices. The preceding analysis addresses this uncertainty by providing likely ranges which should bracket the expected costs that would be incurred by passage of SB848/HB1309.

Exhibits

Exhibit I

Affected Population Estimates for Lymphedema Mandate, SB848

Under-65 Population

	2005	2006	2007	2008	2009
Employer-FI	2,957,200	2,970,800	2,984,100	2,997,600	3,011,700
MassHealth	771,120	760,770	750,510	751,770	753,120
Other	286,700	284,100	281,500	283,100	284,700
TOTAL	4,015,020	4,015,670	4,016,110	4,032,470	4,049,520

Exhibit II
Summary of Volume and Cost of Incremental Service Estimates for Lymphedema Mandate

	Patients	Units of Service			Spending		
	Per Year	Pressure Garments**	Massage Therapy	Total	Pressure Garments**	Massage Therapy	Total
2003 Base Period							
Low Impact Scenario	1,318	1,258	3,953	5,211	$ 50,302	$ 217,419	$ 267,721
Middle Impact Scenario	1,599	2,106	7,995	10,101	$ 126,360	$ 479,672	$ 606,032
High Impact Scenario	1,836	2,808	12,852	15,660	$ 224,640	$ 835,348	$ 1,059,988
2009 Projection							
Low Impact Scenario	1,335	1,205	4,005	5,210	$ 54,281	$ 248,050	$ 302,331
Middle Impact Scenario	1,701	2,119	8,504	10,623	$ 147,435	$ 591,721	$ 739,156
High Impact Scenario	2,046	2,960	14,321	17,281	$ 282,723	$1,111,537	$ 1,394,260

*Assumes procedure rate trend associated with "low scenario". Middle and High Scenarios have higher "without mandate" patient counts.
*MassHealth only. Other insurers already cover.

Exhibit III
Summary of Cost Impact Scenarios for Lymphedema Mandate

Low Scenario	2005	2006	2007	2008	2009
Lymphedema					
Per Patient Impact	$ 171	$ 174	$ 178	$ 181	$ 185
Monthly Premium Impact - Claims	$ 0.0103	$ 0.0105	$ 0.0107	$ 0.0109	$ 0.0111
Administration Premium Impact	$ 0.0004	$ 0.0005	$ 0.0005	$ 0.0005	$ 0.0005
Total Monthly Premium Impact	$ 0.0107	$ 0.0109	$ 0.0112	$ 0.0114	$ 0.0116
Dollar Impact - Claims (000s)	$ 279	$ 285	$ 291	$ 297	$ 302
Administration (000s)	$ 16	$ 16	$ 17	$ 23	$ 23
Total Impact (000s)	$ 295	$ 301	$ 307	$ 320	$ 326

Mid-Range Scenario	2005	2006	2007	2008	2009
Lymphedema					
Per Patient Impact	$ 328	$ 336	$ 344	$ 352	$ 360
Monthly Premium Impact - Claims	$ 0.0251	$ 0.0259	$ 0.0268	$ 0.0276	$ 0.0285
Administration Premium Impact	$ 0.0017	$ 0.0017	$ 0.0018	$ 0.0018	$ 0.0019
Total Monthly Premium Impact	$ 0.0268	$ 0.0277	$ 0.0286	$ 0.0295	$ 0.0304
Dollar Impact - Claims (000s)	$ 650	$ 673	$ 695	$ 717	$ 739
Administration (000s)	$ 59	$ 61	$ 64	$ 89	$ 92
Total Impact (000s)	$ 709	$ 734	$ 758	$ 806	$ 831

High Scenario	2005	2006	2007	2008	2009
Lymphedema					
Per Patient Impact	$ 522	$ 536	$ 550	$ 563	$ 577
Monthly Premium Impact - Claims	$ 0.0459	$ 0.0479	$ 0.0500	$ 0.0521	$ 0.0542
Administration Premium Impact	$ 0.0041	$ 0.0043	$ 0.0045	$ 0.0046	$ 0.0048
Total Monthly Premium Impact	$ 0.0499	$ 0.0522	$ 0.0545	$ 0.0567	$ 0.0590
Dollar Impact - Claims (000s)	$ 1,187	$ 1,239	$ 1,290	$ 1,342	$ 1,394
Administration (000s)	$ 145	$ 152	$ 159	$ 224	$ 234
Total Impact (000s)	$ 1,332	$ 1,391	$ 1,450	$ 1,567	$ 1,628

Appendices

Appendix A

Development of Population Estimates

The objective for the population analysis was to develop Massachusetts population projections for the active or retired employees of the Commonwealth that are fully insured and under 65 years of age, the commercially fully insured individuals under 65 years of age, and MassHealth enrollees (who are also all under 65; those over 65 are not in the MassHealth waiver). We produced estimates for the under 65 population with group and other policies, including both state employees and the remaining fully insured population, and for MassHealth. In order to estimate the required population numbers, it was necessary to develop projections at the following level of detail:

- By year through 2009
- By gender
- By age grouping
    - Less than 18
    - 18-65
    - 65 or greater
- By insurance status for under 65 population
    - Uninsured
    - Insured by employer-sponsored fully insured plan
    - Insured by employer-sponsored self-insured plan
    - Insured by non-group policy
    - Insured by MassHealth
    - Insured by other Medicaid programs

The population projections for this analysis were developed by reference to various reports, tables and other data sources at the following web sites:

- Massachusetts Division of Health Care Finance and Policy ("MADHCFP")
- United States Census Bureau ("Census Bureau")
- Massachusetts Institute of Social and Economic Research ("MISER")
- Kaiser Family Foundation
- Centers for Medicare and Medicaid Services ("CMS")

The first step was to determine the actual Massachusetts population split by age group. According to the Massachusetts "Quickfacts" exhibit on the Census Bureau website, the Massachusetts population in 2002 was 6,428,000. This population was allocated by age by referring to percentages in the Quickfacts exhibit for "Persons Under 18 Years Old" and "Persons 65 Years Old and Over" for 2000. To project these factors to 2002, we referred to an exhibit on the MISER web site entitled "Massachusetts Population Projection Data". From this exhibit, we were able to derive changes in the age mix distribution over time.

To project the population to 2009, we developed growth rates that varied by age category from the MISER exhibit. The MISER exhibit allowed us to develop one set of annualized growth rates for 2002-2005 and another for 2005-2009.

To project a split in this population by gender, we referred to a report on the Census Bureau web site entitled: "Population Projections for States by Selected Age Groups and Sex: 1995-2020". From this report, the female percentage, by age category, of the projected population could be determined at various points in the future.

The final step was to determine the insurance status for this projected population. To do this, we referred to several sources:

1.) Historical Health Insurance Tables HI-5 and HI-6 on the Census Bureau web site show a split of the Massachusetts population by health insurance status. Table HI-5 is for Children under 18 and Table HI-6 is for People Under Age 65.

2.) From the MADHCFP web site, we referred to a report entitled "Health Insurance Status of Massachusetts (Third Edition)" with a publication date of January 2003. Figure 1 of this report indicates that 3.2% of Massachusetts residents ages 0-18 are uninsured. The same rate for ages 19-64 is 9.2%.

3.) Table A-2 of a report entitled "Health Insurance Coverage in the United States: 2002" on the Census Bureau web site shows information on the nature of health insurance coverage in 2002. This detail is available at the national and regional level, but not at the state level. From this report, an estimate of the portion of insured Massachusetts residents who are covered by individually or direct-purchased health insurance policies can be determined. This estimate was made by assuming that direct-purchase health insurance is less prevalent in Massachusetts than in the Northeast region. In general, in the New England states, individual health insurance is more heavily regulated, resulting in more costly policies owing to community rating requirements. As a result, enrollment in individual or direct-purchase policies tends to be lower. This presumption is consistent with estimates of direct purchased health insurance on both the Kaiser and Census Bureau web sites.

4.) Overall Medicaid enrollment statistics were taken from the Kaiser Family Foundation State Health Facts Online web site. MassHealth enrollment statistics were taken from a Section 1115 fact sheet found on the CMS web site.

5.) A MADHCFP report entitled "Source of Insurance Coverage for Massachusetts Residents (2002)" shows that 61% of the entire population of Massachusetts is covered by employer-sponsored plans.

6.) We relied on a MADHCFP study that determined that 27% of the insured population covered by employer-sponsored plans was covered by self-funded plans that were exempt from the requirements of these mandates.

The population estimates from these various sources were not always consistent and judgment was required to resolve these discrepancies. With the data from these sources, we determined the insurance status as follows:

1.) We started with the distribution of the population by health insurance status for Massachusetts for 2002 as defined by the Historic Health Insurance Tables HI-5 and HI-6.

2.) Tables HI-5 and HI-6 appear to over-count the uninsured population and undercount the Medicaid population, based on the other statistics referred to above. Adjustments were made to correct for these discrepancies.

3.) The direct-purchase insured population reported in Historical Health Insurance Table HI-6 was adjusted upwards to better align with the estimates for the Northeast region according to the Census Bureau's "Health Insurance Coverage in the United States: 2002". This adjustment also enhances the consistency of the rest of the assumed distribution with the other data sources.

4.) Seventy three percent of the enrollment in employer-sponsored was assumed to be fully insured and the remaining 27% was assumed to be self-insured.

5.) Incremental shifts in the distribution were assumed based on past trends and expectations of future changes.

Appendix B

Development of Administrative Cost Estimates

The incremental administrative costs associated with the mandate consist of two components:

1.) Incremental Administrative Expenses
2.) Incremental Margins

Estimates of the impact of these adjustments were derived by reviewing financial statement data for the major health plans operating in Massachusetts.

The low scenario includes 3% for incremental pre-tax margin and 1.2% for incremental administrative expenses, or a total of 4.2%. Our high scenario includes 6% for incremental pre-tax margin and 4.2% for incremental expenses, or a total of 10.2%.

Based on financial statement data, it appears that overall administrative expenses for the major Massachusetts health plans range from 8-12% of revenue. It is conceivable that administrative expenses could be higher for a smaller insurer with less economies of scale. For this analysis, we assumed overall administrative expense ratios of 8% - 14% of revenue.

A large portion of these administrative expenses will not vary because of the mandate, so the impact of these mandates on this portion will be zero. Different health plans will have different administrative expense structures. For this analysis, we assumed that the proportion of administrative expenses that will be affected by these mandates will range from 15% to 30%. So, for example, if administrative expenses are 10% and the proportion affected by the mandate is 20%, we assume that 2% of total expenses are affected.

Therefore, the low impact will be 1.2% (15% of 8%) and the high impact will be 4.2% (30% of 14%). In each case, this factor will only apply to the incremental medical claim expense already determined, which is itself a tiny percentage of the overall healthcare premium.

All health plans are required by state insurance regulators to maintain adequate ratios of net worth to premium, as measured by the risk-based capital (RBC) formula. Therefore, health plans must earn margins sufficient to maintain net worth at acceptable levels. The actual level depends on enrollment growth, trend levels and management discretion, among other factors.

In addition, it is assumed that all health plans are subject to federal income taxation. Therefore, the residual margin after payment of federal taxes must be sufficient to maintain adequate net worth levels, as determined by the RBC formula.

In this analysis, it is assumed that the minimum pre-tax margin would be 3%. Because of RBC requirements, a health plan cannot set pre-tax margins any lower and reasonably expect to maintain adequate net worth in today's trend environment. We further assumed that some plans might choose to set margins of as much as 6%, so that net worth adequacy can be enhanced.

The analysis also assumes that the majority of health plans in Massachusetts are non-profits and are not subject to state premium taxes. The impact of the mandate would be greater for a plan that pays premium taxes, as an appropriate provision would have to be made in the pricing.